

WHAT IS CLAIMED IS:

1. A vector comprising a first gene which encodes a transcription factor, a second gene which is inducible, a constitutive promoter, a third gene, and two recombination sites flanking a terminator.
2. The vector of claim 1 wherein said transcription factor together with an inducer induces expression of said second gene.
3. The vector of claim 1 wherein said second gene encodes a recombinase which cleaves at said two recombination sites.
4. The vector of claim 1 wherein when said second gene is induced its gene product excises said terminator.
5. The vector of claim 1 wherein upon excision of said terminator said third gene is under the control of said constitutive promoter.
6. The vector of claim 1 wherein said transcription factor is a glucocorticoid receptor.
7. The vector of claim 1 wherein said second gene encodes CRE, FLP, GIN or R.
8. The vector of claim 1 wherein said recombination sites are *lox*, *FRT*, *gix* or *RS*.
9. The vector of claim 1 wherein said third gene encodes LEAFY.
10. The vector of claim 1 wherein said second gene encodes a protein comprising an N-terminal transit peptide for chloroplast targeting.
11. A vector comprising an inducible promoter, a first gene under the control of said inducible promoter, a constitutive promoter, two recombination sites flanking a terminator, and a second gene.

052556-10

12. The vector of claim 11 wherein said inducible promoter is selected from the group consisting of a heat shock promoter, a light-inducible promoter, a copper-inducible promoter, a tetracycline-inducible promoter, an ethanol-inducible promoter, an ecdysone-inducible promoter and a glucocorticoid inducible promoter.

13. The vector of claim 11 wherein said first gene encodes a recombinase which cleaves at said two recombination sites.

14. The vector of claim 11 wherein when said first gene is induced its gene product excises said terminator.

15. The vector of claim 11 wherein upon excision of said terminator said second gene is under the control of said constitutive promoter.

16. The vector of claim 11 wherein said first gene encodes CRE, FLP, GIN or R.

17. The vector of claim 11 wherein said recombination sites are *lox*, *FRT*, *gix* or *RS*.

18. The vector of claim 11 wherein said second gene encodes LEAFY.

19. The vector of claim 11 wherein said first gene encodes a protein comprising an N-terminal transit peptide for chloroplast targeting.

20. A vector comprising a first gene which encodes a transcription factor, a second gene which is inducible, a constitutive promoter, a third gene, and two recombination sites flanking said third gene.

21. The vector of claim 20 wherein said transcription factor together with an inducer induces expression of said second gene.

22. The vector of claim 20 wherein said second gene encodes a recombinase which cleaves at said two recombination sites.

23. The vector of claim 20 wherein when said second gene is induced its gene product causes inversion of said third gene.

24. The vector of claim 20 wherein upon inversion of said third gene, said third gene is under the control of said constitutive promoter.

25. The vector of claim 20 wherein said transcription factor is a glucocorticoid receptor.

26. The vector of claim 20 wherein said second gene encodes CRE, FLP, GIN or R.

27. The vector of claim 20 wherein said recombination sites are *lox*, *FRT*, *gix* or *RS*.

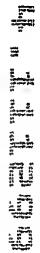
28. The vector of claim 20 wherein said third gene encodes LEAFY.

29. The vector of claim 20 wherein said second gene encodes a protein comprising an N-terminal transit peptide for chloroplast targeting.

30. A vector comprising an inducible promoter, a first gene under the control of said inducible promoter, a constitutive promoter, and two recombination sites flanking a second gene.

31. The vector of claim 30 wherein said inducible promoter is selected from the group consisting of a heat shock promoter, a light-inducible promoter, a copper-inducible promoter, a tetracycline inducible promoter, an ethanol-inducible promoter, and ecdysone inducible promoter and a glucocorticoid inducible promoter.

32. The vector of claim 30 wherein said first gene encodes a recombinase which cleaves at said two recombination sites.

SEARCHED  FILED 

33. The vector of claim 30 wherein when said first gene is induced its gene product causes inversion of said second gene.

34. The vector of claim 30 wherein upon inversion of said second gene, said second gene is under the control of said constitutive promoter.

35. The vector of claim 30 wherein said first gene encodes CRE, FLP, GIN or R.

36. The vector of claim 30 wherein said recombination sites are *lox*, *FRT*, *gix* or *RS*.

37. The vector of claim 30 wherein said second gene encodes LEAFY.

38. The vector of claim 30 wherein said first gene encodes a protein comprising an N-terminal transit peptide for chloroplast targeting.

39. A vector comprising a gene of interest, a gene encoding a transcription factor, a marker gene, an inducible gene encoding a recombinase, and two recombination sites, wherein said recombination sites flank said gene encoding a transcription factor, said marker gene and said inducible gene.

40. The vector of claim 39 wherein said transcription factor together with an inducer induce expression of said inducible gene.

41. The vector of claim 39 wherein said recombinase causes deletion of said gene encoding a transcription factor, said marker gene and said inducible gene.

*sub b* 42. The vector of claim 39 wherein said transcription factor is a glucocorticoid receptor.

43. The vector of claim 39 wherein said inducible gene encodes CRE, FLP, GIN or R.

44. The vector of claim 39 wherein said recombination sites are *lox*, *FRT*, *gix* or *RS*.

6524460

*Sub A3*

45. The vector of claim 44 wherein said *lox* sites are mutant and have a lower affinity for CRE than does wild-type *lox*.

46. The vector of claim 39 wherein said marker gene is under the control of a strong promoter and said inducible gene is under the control of a weak promoter wherein said strong promoter is induced by an inducer at a low concentration and said weak promoter is induced by said inducer at a high concentration.

47. The vector of claim 39 wherein said recombinase comprises an N-terminal transit peptide for chloroplast targeting.

48. A vector comprising a gene of interest, a marker gene, an inducible gene encoding a recombinase, and two recombination sites, wherein said recombination sites flank said marker gene and said inducible gene.

49. The vector of claim 48 wherein said recombinase causes deletion of said marker gene and said inducible gene.

50. The vector of claim 48 wherein said inducible gene encodes CRE, FLP, GIN or R.

51. The vector of claim 48 wherein said recombination sites are *lox*, *FRT*, *gix* or *RS*.

52. The vector of claim 51 wherein said *lox* sites are mutant and have a lower affinity for CRE than does wild-type *lox*.

53. The vector of claim 48 wherein said marker gene is under the control of a strong promoter and said inducible gene is under the control of a weak promoter wherein said strong promoter is induced by an inducer at a low concentration and said weak promoter is induced by said inducer at a high concentration.

54. The vector of claim 48 wherein said recombinase comprises an N-terminal transit peptide for chloroplast targeting.

55. A method for expressing a gene in a transgenic plant or plant cell at a specific time comprising:  
a) transfecting said plant or plant cell with the vector of claim 1; and  
b) adding an inducer to induce said second gene of said vector,  
wherein said second gene of said vector expresses a product which cleaves said terminator from said vector thereby placing said third gene of said vector under the control of said constitutive promoter of said vector resulting in expression of said third gene subsequent to addition of said inducer.

56. A method for expressing a gene in a transgenic plant or plant cell at a specific time comprising:  
a) transfecting said plant or plant cell with the vector of claim 11; and  
b) adding an inducer to induce said first gene of said vector,  
wherein said first gene of said vector expresses a product which cleaves said terminator from said vector thereby placing said second gene of said vector under the control of said constitutive promoter of said vector resulting in expression of said second gene subsequent to addition of said inducer.

57. A method for expressing a gene in a transgenic plant or plant cell at a specific time comprising:  
a) transfecting said plant or plant cell with the vector of claim 20; and  
b) adding an inducer to induce said second gene of said vector,  
wherein said second gene of said vector expresses a product which causes inversion of said third gene of said vector thereby placing said third gene under the control of said constitutive promoter of said vector resulting in expression of said third gene subsequent to addition of said inducer.

092054644852

58. A method for expressing a gene in a transgenic plant or plant cell at a specific time comprising:

- transfected said plant or plant cell with the vector of claim 30; and
- adding an inducer to induce said first gene of said vector, wherein said first gene expresses a product which causes inversion of said second gene of said vector thereby placing said second gene under the control of said constitutive promoter of said vector resulting in expression of said second gene subsequent to addition of said inducer.

59. A method for excising a marker gene from the genome of a transgenic plant or plant cell, comprising:

- transfected a plant or plant cell with the vector of claim 39 to form said transgenic plant or plant cell; and
- adding an inducer to induce said inducible gene, wherein said inducible gene produces a recombinase which removes said marker gene from said genome.

60. The method of claim 59 wherein said transgenic plant or plant cell is selected prior to adding inducer.

61. A method for excising a marker from the genome of a transgenic plant or plant cell, comprising:

- transfected a plant or plant cell with the vector of claim 48 to form said transgenic plant or plant cell; and
- adding an inducer to induce said inducible gene, wherein said inducible gene produces a recombinase which removes said marker gene from said genome.

62. The method of claim 61 wherein said transgenic plant or plant cell is selected prior to adding inducer.

SEARCHED INDEXED  
SERIALIZED FILED  
APR 2 1980

63. A method for making a transgenic plant display a design, a word or words wherein said method comprises the steps of:

- preparing a transgenic plant comprising a vector comprising nucleic acid encoding a recombinase under the control of a chemically inducible promoter and a regulatory factor R that is silent until said recombinase cleaves within said vector; and
- placing a chemical which induces said chemically inducible promoter onto said transgenic plant in the pattern of the design, word or words which are desired; whereby said plant will produce anthocyanin in the pattern in which the chemically inducible promoter was placed onto said transgenic plant.

64. The method of claim 63 wherein said transgenic plant comprises the vector of claim 1 wherein said third gene encodes a regulatory factor R.

65. The method of claim 63 wherein said transgenic plant comprises the vector of claim 11 wherein said second gene encodes a regulatory factor R.

66. The method of claim 63 wherein said transgenic plant comprises the vector of claim 39 wherein said gene of interest encodes a regulatory factor R.

67. The method of claim 63 wherein said transgenic plant comprises the vector of claim 48 wherein said gene of interest encodes a regulatory factor R.

68. A plant or plant cell comprising the vector of claim 1.

69. A plant or plant cell comprising the vector of claim 11.

70. A plant or plant cell comprising the vector of claim 20.

71. A plant or plant cell comprising the vector of claim 30.

72. A plant or plant cell comprising the vector of claim 39.

73. A plant or plant cell comprising the vector of claim 48.

~~22~~